

What is claimed is:

1. A substrate processing apparatus comprising:
 - a processing chamber for accommodating a substrate
 - 5 therein;
 - a mounting table for mounting the substrate thereon;
 - a heating member disposed in the mounting table, for heating the substrate;
 - a sealing member disposed between the mounting table
 - 10 and the processing chamber; and
 - a cooling unit, having a cooling medium, for cooling the sealing member by using a latent heat of vaporization of the cooling medium included therein.
- 15 2. The apparatus of claim 1, wherein the cooling unit includes a depressurized airtight casing for accommodating the cooling medium therein.
- 20 3. The apparatus of claim 1, further comprising a temperature sensor disposed near the sealing member and a cooling unit controller for controlling the cooling unit based on a measurement result of the temperature sensor.
- 25 4. The apparatus of claim 1, further comprising a processing gas supply system for supplying a processing gas into the processing chamber.

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5. The apparatus of claim 4, wherein the processing gas supply system includes a plurality of processing gas supply units for supplying different processing gases and a processing gas supply unit controller for controlling each of the processing gas supply units such that the processing gases are supplied alternately.

6. (Amended) A substrate processing apparatus comprising:

- a processing chamber for accommodating a substrate therein;

- a mounting table having a mounting portion for mounting thereon the substrate and a support for supporting the mounting portion;

- a heating member disposed in the mounting portion, for heating the substrate;

- a sealing member disposed between the support and the processing chamber;

- a shielding member for shielding a heat radiation directed toward the sealing member from the mounting portion; and

- a shielding cap covering a bottom portion of the support.

7. The apparatus of claim 6, wherein the shielding member covers at least a part of a bottom surface of the mounting portion.

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8. The apparatus of claim 6, further comprising a

substrate elevating member for elevating the substrate,
wherein the shielding member supports the substrate
elevating member.

5 9. The apparatus of claim 6, further comprising a
processing gas supply system for supplying a processing gas
into the processing chamber.

10 10. The apparatus of claim 9, wherein the processing gas
supply system includes a plurality of processing gas supply
units for supplying different processing gases and a
processing gas supply unit controller for controlling each
of the processing gas supply units such that the processing
gases are supplied alternately.

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